Committed Scheduling for the 2014-15 Rate Period, Version 5

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This Business Practice implements the four committed scheduling options that are available for customer election in the 2014-2015 rate period (referred to as Committed Scheduling):

- Committed 30/30 Scheduling: Committed 30/30 must schedule in a way that meets or exceeds the accuracy of schedules that use the 30 minute schedule value for a 30 minute intra-hour schedule.

- Committed 30/60 Scheduling: Committed 30/60 must schedule in a way that meets or exceeds the accuracy of schedules that use the 30 minute schedule value for a 60 minute hourly schedule.

- Committed 40/15 Scheduling:Committed 40/15 must schedule in a way that meets or exceeds the accuracy of schedules that use the 40 minute schedule value for a 15 minute intra-hour schedule.

- Committed 30/15 Scheduling: Committed 30/15 must schedule in a way that meets or exceeds the accuracy of schedules that use the 30 minute schedule value for a 15 minute intra-hour schedule.

Committed 30/30 Scheduling and Committed 30/60 Scheduling were available for election to start of the 2014-2015 Rate Period.

Committed 40/15 Scheduling and Committed 30/15 Scheduling were available for election by April 4, 2014 to be effective on October 1, 2014 (the second half of the 2014-2015 Rate Period).

Metrics used to compare schedule accuracy are described in this Business Practice. BPA strongly encourages parties to automate scheduling to the amounts provided.

Under the 2014 Transmission and Ancillary Services Rate Schedules, Ancillary and Control Area Services Rates (ACS-14 Rate Schedule), wind generators that elect Committed Scheduling and meet scheduling accuracy metrics for 30 minute schedules or 15 minute schedules are eligible for a reduced Variable Energy Resource Balancing service (VERBS) rate and are exempt from Persistent Deviation penalties for Generation Imbalance. Wind generators that elect Committed Scheduling and meet scheduling accuracy metrics for 60 minute schedules are exempt from Persistent Deviation penalties for Generation Imbalance.

Bonneville Power Administration (BPA) will provide participants with the schedule amount that meets the accuracy standard for each schedule interval.

Version 5 of this business practice includes provisions for the use of a forecast value during scheduling periods where there is a generation limit or schedule curtailment. Version 5 includes the following changes:

Removed the term "persistence" through out the business practice.

Section E

- Step E.1: Updated to include the use of a generation forecast value in the Committed Scheduling participants scheduling signal.

- Step E.2 and E.3: Sections are deleted to remove the metric performance exemptions.

Section F

- Updated the accuracy metric provisions to include the use of a generation forecast.
- Added a table to communicate the timeframes for posting of the BPA scheduling value by scheduling election.

A. Eligible Committed Scheduling Participants and Resources

1. Any Customer[1] that operates a wind facility within BPA's Balancing Authority Area (BAA) and meets the conditions outlined in this Business Practice may participate in Committed Scheduling. For a wind facility being developed in phases, any phase of a wind facility may participate in Committed Scheduling so long as each phase is metered and scheduled independently and is not otherwise interdependent with any other phase. Each subsequent phase will need to prequalify independently if the phase is to be included in Committed Scheduling.

2. The wind facility must also comply with BPA's Technical Requirements for Interconnection to the BPA Transmission Grid, specifically section 12.2.2 *Data Requirements for Balancing Authority Area Services*

B. Prequalifying Information Required

1. Potential Participants are required to:
   a. Notify their BPA Transmission Account Executive in writing of interest in participating.
   b. Identify the Committed Scheduling Resource(s) and provide POR[2] for the wind energy and, if sinking internally to the BPA BAA, POD[3](s).

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[1]Any customer taking service under Use of Facilities (UFT), Formula Power Transmission (FPT), Integration of Resources (IR), Generation Integration Services, Part II or Part III of the OATT.
[2]Point of Receipt is an interconnection on the Transmission Provider's Transmission System where capacity and energy will be made available by the Delivering Party: An OASIS field on a Reservation that is the scheduling POR.

    c. If the POD for a Committed 30/30, Committed 40/15, and Committed 30/15 Scheduling Resource is to load inside BPA's Balancing Authority Area, the Potential Participant must provide their Transmission Account Executive with written confirmation from the load that it has a Balancing Resource that it will schedule to load on each half hour or 15 minute interval, offsetting any changes in the wind facility output. The written confirmation must include the resource name and POR. Potential Participants may submit a portfolio of balancing resources.

    d. Provide BPA with details for methods by which the Potential Participant expects to achieve scheduling accuracy that is consistent with or superior to the scheduling accuracy metrics described below in section F. BPA will apply the same scheduling accuracy metric regardless of the scheduling method used.

    e. Prior to BPA allowing a Potential Participant to receive the applicable rate associated with Committed Scheduling, the Potential Participant must demonstrate for at least two calendar weeks its ability to meet the scheduling accuracy metric, regardless of whether the resource is new or existing.

    f. The VERBS Base Rate (Section III.E. 2 of BPA's ACS-14 Rate Schedule) in effect at the time of the Potential Participants election to participate in Committed Scheduling will apply during the period that the Potential Participant is providing prequalifying information to BPA and demonstrating the ability to meet the scheduling accuracy metrics. Should the Potential Participant not demonstrate its ability to meet the scheduling accuracy metrics for its election level by the effective date to move to the new planned level of service, the elected VERBS Base Rate plus any applicable Direct Assignment Costs as described in Section III.E. 6.2 of BPA's ACS-14 Rate Schedule will apply.

    g. A resource planned to come on-line during the 2014-2015 rate period that elects to participate in Committed Scheduling will have two calendar weeks from their commercial operations date to test their ability to meet the scheduling accuracy metrics for their elected scheduling option.

      i. The elected VERBS Base Rate plus any applicable Direct Assignment Costs as described in Section III.E. 6.2 of BPA's ACS-14 Rate Schedule will apply until the Participant receives Notification of Participation, as defined in Section G, below.

      ii. The rate for the elected, and qualified for, Committed Scheduling option will take effect the first day of the next billing cycle no sooner than five days following receipt by Participant of Notification of Participation.

    h. Provide any other pertinent information requested by BPA Transmission Services.

C. Generation Imbalance and Energy Imbalance

1. Energy Imbalance[4] risk: For Committed 30/30, Committed 40/15, and Committed 30/15 Scheduling Resources with wind energy sinking to loads within the BPA BA, a Balancing Resource[5] must be identified, as noted above in B.1.b and B.1.c. If the intra-hour

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[3] Point of Delivery is a point on the Transmission Provider's Transmission System where capacity and energy transmitted by the Provider will be made available to the Receiving Party; An OASIS field on a Reservation that is the scheduling POD.

[4] Difference occurring between hourly scheduled amount and hourly metered (actually-delivered) amount associated with transmission to a load located in the BPA Balancing Authority area or from a generation resource located within BPA's Balancing Authority Area.

[5] A dispatchable resource within or outside of the BPA Balancing Authority that is available to the load served by the Committed Scheduling Resource on the half hour.

schedule is adjusted for the wind plant without also adjusting the Balancing Resource output, such increases or patterns of imbalance could result in Persistent Deviation penalties for Energy Imbalance.

2. Committed Scheduling Resources and Balancing Resources are subject to Generation Imbalance. Generation Imbalance for Committed Scheduling Resources and Balancing Resources is calculated on the shortest schedule interval submitted within the hour: each hour would be calculated on either, 15 minute, 30 minute, or 60 minute, but would not be calculated on a combination of time intervals. (See the Generation Imbalance Business Practice).

3. Committed Scheduling Resources are exempt from Persistent Deviation penalties for Generation Imbalance if they meet their scheduling metrics.

4. Balancing Resources are subject to Persistent Deviation penalties for Generation Imbalance and for Energy Imbalance.

D. Compliance with Dispatch Orders

1. Committed Scheduling participants are subject to Dispatch Orders, including Curtailments, generation limits and Dispatch Standing Order No. 216.

2. A Committed Scheduling participant that does not respond appropriately to a Dispatch Order[6] is subject to a Failure to Comply Penalty[7].

E. Committed Resource Scheduling for DSO-216, Curtailments, and Data Link System Failures

1. During a DSO-216 limit generation event or transmission schedule curtailment, the persistence value in the participant's committed scheduling signal will be replaced by a generation forecast value. For the subsequent scheduling interval, the participant is expected to schedule to the committed scheduling value provided. The metric performance requirements of the Committed Scheduling participant will be evaluated on the committed scheduling value provided in the signal, either persistence or forecast based.2. During a DSO-216 schedule Curtailment the Committed Scheduling Resource does not need to limit its generation in response to the DSO-216 schedule Curtailment if there are no other transmission Curtailments affecting e-Tags sourced at the Committed Scheduling Resource.3. During a transmission schedule curtailment, participants are expected to comply and limit generation to not exceed the sum of remaining approved e-Tags during the Curtailment.4. During an iCRS[8] Generation Advisor, or another mutually agreed to data link, system failure the scheduling value that BPA will use for determining scheduling accuracy performance (as explained further in Section F below) ceases to be produced. The participant should schedule the subsequent scheduling interval as accurately as possible. In recognition that inaccuracy

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[6]An order or directive from Transmission Services to dispatch, curtail, redispatch, limit output, or shed load. Dispatch orders may be communicated by various methods including, but not limited to : phone call (e.g. to redispatch generation up or down); electronic signal (e.g. via direct telemetry or private web application to limit generation according to DSO216); or NERC e-tagging system (e.g. to curtail transmission schedules and the generation using those schedules).

[7]The consequences of non-compliance as defined in the Failure to Comply Business Practice in effect at the time.

[8]BPA's Integrated Curtailment and Redispatch System, as implemented through BPA's Generation Advisor web application.

could result from unavailability of the scheduling value, BPA will exclude the subsequent schedule interval from scheduling accuracy metrics.

F. Schedule Accuracy Metrics

1. BPA's scheduling value will be updated every 5 minutes to meet the requirements of the various committed scheduling elections. The schedule value is either:
    i.   Persistence value: The generator's schedule for the next schedule interval is the generator's 1-minute average of the actual generation; or
    ii. Generation forecast value: The generator's schedule for the next schedule interval is the generator's forecast value as provided by BPA.

2. Through a mutually agreed to data link, BPA will provide the schedule value that BPA will use for determining scheduling accuracy performance. The following table identifies the timeframes to utilize the BPA scheduling value for each scheduling election. The posting period for each scheduling election is used to determine the applicable scheduling value when determining compliance with the scheduling accuracy metrics.

Period Start	x1:00			x1:15			x1:30			x1:45		
Scheduling Election	Calculated	Posted	Schedule Period	Calculated	Posted	Schedule Period	Calculated	Posted	Schedule Period	Calculated	Posted	Schedule Period
30/15	xx:29 - xx:30	xx:30 - xx:35	x1:00-x1:15	xx:44 - xx:45	xx:45 - xx:50	x1:15-x1:30	xx:59 - xx:00	xx:00 - xx:05	x1:30-x1:45	xx:14 - xx:15	xx:15 - xx:20	x1:45-x2:00
40/15	xx:19 - xx:20	xx:20 - xx:25	x1:00-x1:15	xx:34 - xx:35	xx:35 - xx:40	x1:15-x1:30	xx:49 - xx:50	xx:50 - xx:55	x1:30-x1:45	xx:04 - xx:05	xx:05 - xx:10	x1:45-x2:00
30/30	xx:29 - xx:30	xx:30 - xx:35	x1:00-x1:30	NA	NA	NA	xx:59 - xx:00	xx:00 - xx:05	x1:30-x2:00	NA	NA	NA
30/60	xx:29 - xx:30	xx:30 - xx:35	x1:00-x2:00	NA	NA	NA	NA	NA	NA	NA	NA	NA

3. The schedule value will be updated within 1 minute after the start of the posting period for the applicable scheduling election. In the event BPA does not update the schedule value within 2 minutes of the start of the posting period, BPA will deem this a BPA system failure in accordance with Section E.4 of this business practice.

4. Committed 30/30 Scheduling
    a. BPA will verify on an ongoing basis that the intra-hour schedule is at least as accurate as 30-minute schedule value. The baseline metrics for accuracy comparison include a capacity, energy, and accumulated energy component. The committed scheduling participant is expected to schedule to the value provided in the data link established for their resource.
    b. A 20-minute ramp duration is used to ramp from the second half of the hour schedule to first half of the hour schedule beginning at XX:50 and ending at XX:10. A 10-minute ramp duration is used to ramp from the first half of the hour schedule to the second half of the hour schedule beginning at XX:25 and ending at XX:35.
    c. Capacity Component: For the capacity component, the largest absolute value of the actual 1-minute averaged station control error should be less than or equal to the largest absolute value of the 1-minute averaged station control error calculated from 30-minute schedule value plus a capacity component dead band over the last seven days. The capacity component dead band is the greater of 1 MW or 2 percent of the largest absolute value of the 1-minute averaged station control error calculated from 30-minute schedule value over the last seven calendar days.

$$\text{MAX}(|\text{SCE}_{\text{1min Ave, Actual}}|) \leq \text{MAX}(|\text{SCE}_{\text{1min Ave}}|) + \text{DB}_{\text{capacity}}$$

$$\text{DB}_{\text{capacity}} = \text{Greater of 1 MW or 2\% of last 7 day's MAX}(|\text{SCE}_{\text{1min Ave}}|)$$

$$\text{SCE}_{\text{1min Ave, Actual}} = \text{Last 7 day's actual 1-min averaged SCE}$$

$$\text{SCE}_{\text{1min Ave}} = \text{Last 7 day's 30-minute Schedule's 1-min averaged SCE}$$

Equation 1- Capacity Component

d. Energy Component: For the energy component, the sum of the absolute value of the actual integrated imbalance over each 30-minute schedule interval should be less than or equal to the sum of the absolute value of the integrated imbalance over each 30-minute schedule interval from a calculated 30-minute schedule value plus an energy component dead band over the last seven days. The energy component dead band is the greater of 50MWh or 2 percent of the sum of the absolute value of the integrated imbalance over each 30-minute schedule interval from a calculated 30-minute schedule value over the last seven calendar days.

$$\sum |\text{SCE}_{\text{30min Ave, Actual}} \times (0.50 \text{ hour})| \leq \sum |\text{SCE}_{\text{30min Ave}} \times (0.50 \text{ hour})| + \text{DB}_{\text{energy}}$$

$$\text{DB}_{\text{energy}} = \text{Greater of 50 MWh or 2\% of last 7 day's } \sum |\text{SCE}_{\text{30min Ave}} \times (0.50 \text{ hour})|$$

$$\text{SCE}_{\text{30min Ave, Actual}} = \text{Last 7 day's actual 30-min averaged SCE}$$

$$\text{SCE}_{\text{30min Ave}} = \text{Last 7 day's 30-minute Schedule's 30-min averaged SCE}$$

Equation 2 - Energy Component

e. Accumulated Energy Imbalance Component: In addition, the absolute value of the bias in energy imbalance accumulation over the last seven calendar days should be less than or equal to the bias resulting from 30-minute schedule value plus an imbalance component dead band.

$$|\sum \text{SCE}_{\text{30min Ave, Actual}} \times (0.50 \text{ hour})| \leq |\sum \text{SCE}_{\text{30min Ave}} \times (0.50 \text{ hour})| + \text{DB}_{\text{energy}}$$

$$\text{DB}_{\text{energy}} = \text{Greater of 50 MWh or 2\% of last 7 day's } |\sum \text{SCE}_{\text{30min Ave}} \times (0.50 \text{ hour})|$$

$$\text{SCE}_{\text{30min Ave, Actual}} = \text{Last 7 day's actual 30-min averaged SCE}$$

$$\text{SCE}_{\text{30min Ave}} = \text{Last 7 day's 30-minute Schedule's 30-min averaged SCE}$$

Equation 3 - Accumulated Energy Imbalance

f. A Committed 30/30 Scheduling Participant scheduling to the BPA-provided 30-minute schedule value for every 30-minute schedule interval will satisfy the schedule accuracy metrics for capacity, energy, and accumulated Energy Imbalance.

g. For a Committed 30/30 Balancing Resource scheduling generation to loads within the BPA BA, BPA will also verify that the Balancing Resource is adjusting in conjunction with the wind resource schedule changes. BPA will check the intra-hour change in the sum of schedules for the Balancing Resource against the intra-hour change for the Committed 30/30 Scheduling Resource to ensure that use of FCRPS balancing reserve capacity is reduced.

3. Committed 30/60 Scheduling
   a. BPA will verify on an ongoing basis that the hourly schedule used is at least as accurate as the 30-minute schedule value. The baseline metrics for accuracy comparison shall include a capacity, energy, and accumulated energy component. The committed scheduling participant is expected to schedule to the value provided in the data link established for their resource.
   b. If a participant that elected Committed 30/60 Scheduling chooses to correct their schedule in mid-hour, the metric for that schedule interval will be the least restrictive of the Committed 30/30 or Committed 30/60 Scheduling Accuracy Metrics.
   c. A 20-minute ramp duration is used to ramp from the end of the previous hour schedule to the next hour schedule beginning at XX:50 and ending at XX:10.
   d. Capacity Component: For the capacity component, the largest absolute value of the actual 1-minute averaged station control error should be less than or equal to the largest absolute value of the 1-minute averaged station control error calculated from 30-minute schedule value plus a capacity component dead band over the last seven days. The capacity component dead band is the greater of 1 MW or 2 percent of the largest absolute value of the 1-minute averaged station control error calculated from 30-minute schedule value over the last seven days.

$$MAX(|SCE_{1min\ Ave,\ Actual}|) \leq MAX(|SCE_{1min\ Ave}|) + DB_{capacity}$$

$$DB_{capacity} = \text{Greater of 1 MW or 2\% of last 7 day's } MAX(|SCE_{1min\ Ave}|)$$

$$SCE_{1min\ Ave,\ Actual} = \text{Last 7 day's actual 1-min averaged SCE}$$

$$SCE_{1min\ Ave} = \text{Last 7 day's 30-minute Schedule's 1-min averaged SCE}$$

Equation 1- Capacity Component

e. Energy Component: For the energy component, the sum of the absolute value of the actual integrated imbalance over each 60-minute schedule interval should be less than or equal to the sum of the absolute value of the integrated imbalance over each 60-minute schedule interval from a calculated 30-minute schedule value plus an energy component dead band over the last seven days. The energy component dead band is the greater of 50MWh or 2 percent of the sum of the absolute value of the integrated imbalance over each 60-minute schedule interval from a calculated 30-minute schedule value over the last seven days.

$$\sum |SCE_{60min\ Ave,\ Actual}| \leq \sum |SCE_{60min\ Ave}| + DB_{energy}$$

$$DB_{energy} = \text{Greater of 50 MWh or 2\% of last 7 day's } \sum |SCE_{60min\ Ave}|$$

$$SCE_{60min\ Ave,\ Actual} = \text{Last 7 day's actual 60-min averaged SCE}$$

$$SCE_{60min\ Ave} = \text{Last 7 day's 30-minute Schedule's 60-min averaged SCE}$$

Equation 2 - Energy Component

    f. Accumulated Energy Imbalance Component: In addition, the absolute value of the bias in Energy Imbalance accumulation over the last seven days should be less than or equal to the bias resulting from 30-minute schedule value plus an imbalance component dead band.

$$|\sum SCE_{60min\ Ave,\ Actual}| \leq |\sum SCE_{60min\ Ave}| + DB_{energy}$$

$$DB_{energy} = \text{Greater of 50 MWh or 2\% of last 7 day's } |\sum SCE_{60min\ Ave}|$$

$$SCE_{60min\ Ave,\ Actual} = \text{Last 7 day's actual 60-min averaged SCE}$$

$$SCE_{60min\ Ave} = \text{Last 7 day's 30-minute Schedule's 60-min averaged SCE}$$

Equation 3 - Accumulated Energy Imbalance

    g. A Committed 30/60 Scheduling Participant scheduling to the BPA-provided 30-minute schedule value for every 60-minute schedule interval will satisfy the schedule accuracy metrics for capacity, energy, and accumulated Energy Imbalance.

4. Committed 40/15 Scheduling
  a. BPA will verify on an ongoing basis that the intra-hour schedule is at least as accurate as 15-minute schedule value. The baseline metrics for accuracy comparison include a capacity, energy, and accumulated energy component. The committed scheduling participant is expected to schedule to the value provided in the data link established for their resource.

  b. A 20-minute ramp duration is used to ramp from the fourth scheduling interval of the hour schedule to the first schedule interval of the hour schedule beginning at XX:50 and ending at XX:10. A 10-minute ramp duration is used to ramp from the first schedule interval of the hour schedule to the second, the second schedule interval of the hour to the third, and the third schedule interval of the hour to the fourth beginning 5 minutes before the start of the schedule interval and ending 5 minutes after the start of the schedule interval. For example the ramp for the third schedule interval of the hour, xx:30 to xx:45, starts at XX:25 and ends at XX:35.

  c. Capacity Component: For the capacity component, the largest absolute value of the actual 1-minute averaged station control error should be less than or equal to the

largest absolute value of the 1-minute averaged station control error calculated from 40-minute schedule value plus a capacity component dead band over the last seven days. The capacity component dead band is the greater of 1 MW or 2 percent of the largest absolute value of the 1-minute averaged station control error calculated from 40-minute schedule value over the last seven calendar days.

$$MAX(|SCE_{1min\ Ave,\ Actual}|) \le MAX(|SCE_{1min\ Ave}|) + DB_{capacity}$$

$$DB_{capacity} = \text{Greater of 1 MW or 2\% of last 7 day's } MAX(|SCE_{1min\ Ave}|)$$

$$SCE_{1min\ Ave,\ Actual} = \text{Last 7 day's actual 1-min averaged SCE}$$

$$SCE_{1min\ Ave} = \text{Last 7 day's 40-minute Schedule's 1-min averaged SCE}$$

Equation 1- Capacity Component

d. Energy Component: For the energy component, the sum of the absolute value of the actual integrated imbalance over each 15-minute schedule interval should be less than or equal to the sum of the absolute value of the integrated imbalance over each 15-minute schedule interval from a calculated 40-minute schedule value plus an energy component dead band over the last seven days. The energy component dead band is the greater of 50MWh or 2 percent of the sum of the absolute value of the integrated imbalance over each 15-minute schedule interval from a calculated 40-minute schedule value over the last seven calendar days.

$$\sum|SCE_{15min\ Ave,\ Actual} \times (0.25\ hour)| \le \sum|SCE_{15min\ Ave,} \times (0.25\ hour)| + DB_{energy}$$

$$DB_{energy} = \text{Greater of 50 MWh or 2\% of last 7 day's } \sum|SCE_{15min\ Ave} \times (0.25\ hour)|$$

$$SCE_{15min\ Ave,\ Actual} = \text{Last 7 day's actual 15-min averaged SCE}$$

$$SCE_{15min\ Ave} = \text{Last 7 day's 40-minute Schedule's 15-min averaged SCE}$$

Equation 2 - Energy Component

e. Accumulated Energy Imbalance Component: In addition, the absolute value of the bias in energy imbalance accumulation over the last seven calendar days should be less than or equal to the bias resulting from 40-minute schedule value plus an imbalance component dead band.

$$|\sum SCE_{15min\ Ave,\ Actual} \times (0.25\ hour)| \le |\sum SCE_{15min\ Ave} \times (0.25\ hour)| + DB_{energy}$$

$$DB_{energy} = \text{Greater of 50 MWh or 2\% of last 7 day's } |\sum SCE_{15min\ Ave} \times (0.25\ hour)|$$

$$SCE_{15min\ Ave,\ Actual} = \text{Last 7 day's actual 15-min averaged SCE}$$

$$SCE_{15min\ Ave} = \text{Last 7 day's 40-minute Schedule's 15-min averaged SCE}$$

Equation 3 - Accumulated Energy Imbalance

    f. A Committed 40/15 Scheduling Participant scheduling to the BPA-provided 40-minute schedule value for every 15-minute schedule interval will satisfy the schedule accuracy metrics for capacity, energy, and accumulated Energy Imbalance.

    g. For a Committed 40/15 Balancing Resource scheduling generation to loads within the BPA BA, BPA will also verify that the Balancing Resource is adjusting in conjunction with the wind resource schedule changes. BPA will check the intra-hour change in the sum of schedules for the Balancing Resource against the intra-hour change for the Committed 40/15 Scheduling Resource to ensure that use of FCRPS balancing reserve capacity is reduced.

5.   Committed 30/15 Scheduling

    a. BPA will verify on an ongoing basis that the intra-hour schedule is at least as accurate as 30-minute schedule value. The baseline metrics for accuracy comparison include a capacity, energy, and accumulated energy component. The committed scheduling participant is expected to schedule to the value provided in the data link established for their resource.

    b. A 20-minute ramp duration is used to ramp from the fourth scheduling interval of the hour schedule to first schedule interval of the hour schedule beginning at XX:50 and ending at XX:10. A 10-minute ramp duration is used to ramp from the first schedule interval of the hour schedule to the second, the second schedule interval of the hour to the third, and the third schedule interval of the hour to the fourth beginning 5 minutes before the start of the schedule interval and ending 5 minutes after the start of the schedule interval. For example the ramp for the third schedule interval of the hour, xx:30 to xx:45, starts at XX:25 and ends at XX:35.

    c. Capacity Component: For the capacity component, the largest absolute value of the actual 1-minute averaged station control error should be less than or equal to the largest absolute value of the 1-minute averaged station control error calculated from 30-minute schedule value plus a capacity component dead band over the last seven days. The capacity component dead band is the greater of 1 MW or 2 percent of the largest absolute value of the 1-minute averaged station control error calculated from 30-minute schedule value over the last seven calendar days.

$$MAX(|SCE_{1min\ Ave,\ Actual}|) \leq MAX(|SCE_{1min\ Ave}|) + DB_{capacity}$$

$$DB_{capacity} = Greater\ of\ 1\ MW\ or\ 2\%\ of\ last\ 7\ day's\ MAX(|SCE_{1min\ Ave}|)$$

$$SCE_{1min\ Ave,\ Actual} = Last\ 7\ day's\ actual\ 1\text{-}min\ averaged\ SCE$$

$$SCE_{1min\ Ave} = Last\ 7\ day's\ 30\text{-}minute\ Schedule's\ 1\text{-}min\ averaged\ SCE$$

Equation 1- Capacity Component

    d. Energy Component: For the energy component, the sum of the absolute value of the actual integrated imbalance over each 15-minute schedule interval should be less than or equal to the sum of the absolute value of the integrated imbalance over each 15-minute schedule interval from a calculated 30-minute schedule value plus an energy component dead band over the last seven days. The energy component dead

band is the greater of 50MWh or 2 percent of the sum of the absolute value of the integrated imbalance over each 15-minute schedule interval from a calculated 30-minute schedule value over the last seven calendar days.

$$\sum |SCE_{15min\ Ave,\ Actual} \times (0.25\ hour)| \leq \sum |SCE_{15min\ Ave,} \times (0.25\ hour)| + DB_{energy}$$

$$DB_{energy} = \text{Greater of 50 MWh or 2\% of last 7 day's } \sum |SCE_{15min\ Ave} \times (0.25\ hour)|$$

$$SCE_{15min\ Ave,\ Actual} = \text{Last 7 day's actual 15-min averaged SCE}$$

$$SCE_{15min\ Ave} = \text{Last 7 day's 30-minute Schedule's 15-min averaged SCE}$$

Equation 2 - Energy Component

e. Accumulated Energy Imbalance Component: In addition, the absolute value of the bias in energy imbalance accumulation over the last seven calendar days should be less than or equal to the bias resulting from 30-minute schedule value plus an imbalance component dead band.

$$|\sum SCE_{15min\ Ave,\ Actual} \times (0.25\ hour)| \leq |\sum SCE_{15min\ Ave} \times (0.25\ hour)| + DB_{energy}$$

$$DB_{energy} = \text{Greater of 50 MWh or 2\% of last 7 day's } |\sum SCE_{15min\ Ave} \times (0.25\ hour)|$$

$$SCE_{15min\ Ave,\ Actual} = \text{Last 7 day's actual 15-min averaged SCE}$$

$$SCE_{15min\ Ave} = \text{Last 7 day's 30-minute Schedule's 15-min averaged SCE}$$

Equation 3 - Accumulated Energy Imbalance

f. A Committed 30/15 Scheduling Participant scheduling to the BPA-provided 30-minute schedule value for every 15-minute schedule interval will satisfy the schedule accuracy metrics for capacity, energy, and accumulated Energy Imbalance.

g. For a Committed 30/15 Balancing Resource scheduling generation to loads within the BPA BA, BPA will also verify that the Balancing Resource is adjusting in conjunction with the wind resource schedule changes. BPA will check the intra-hour change in the sum of schedules for the Balancing Resource against the intra-hour change for the Committed 30/15 Scheduling Resource to ensure that use of FCRPS balancing reserve capacity is reduced.

G. Notification of Participant Qualification for Committed Scheduling

1. A BPA Transmission Account Executive will notify a potential Committed Scheduling participant via email within 5 calendar days of when the potential participant has met the pre-qualification requirements and request written acknowledgment from the Potential Participant that the terms of this Business Practice will govern participation in Committed Scheduling. BPA must receive the written acknowledgement from the Committed Scheduling participant no later than five Business Days before the end of a month in order to apply the Committed Scheduling VERBS Base Rate (Section III.E.2 of BPA's ACS-14 Rate Schedule) beginning on the first day of the next billing cycle.

2. Testing for qualification to start Committed Scheduling on October 1, 2013 will be performed during September of 2013. Testing for qualification to start Committed

Scheduling on October 1, 2014 (the mid rate period election effective date) will be performed during September of 2014. In planning the time necessary for testing, participants are encouraged to build in time for edits and revisions to systems and processes.

3. BPA encourages Committed Scheduling participants to automate their scheduling at the time they initiate participation.

H. Notification of Failure to Meet Scheduling Accuracy and Termination

1. If the Committed Scheduling participant's scheduling accuracy does not meet the scheduling accuracy metrics, BPA will notify the Committed Scheduling participant within 10 Business Days by e-mail. Upon receipt of such notice, the Committed Scheduling participant is expected to correct the scheduling accuracy within one Business Day.

2. If the failure to meet the scheduling accuracy metrics was caused by factors outside the control of the participant, such as a failure of iCRS, or their mutually agreed to data link, or other data acquisition system problems, the participant may submit the reasons and documentation to their Transmission Account Executive and request that BPA waive the failure. Participant must submit the written request within 10 Business Days of receipt of BPA's notice of failure. If BPA grants the request for waiver, BPA will notify the participant within 10 Business Days of receipt of the request and the failure will not count against the participant. Waiver requests will be evaluated against the schedule value provided by BPA from the mutually agreed to data link.

3. BPA will require the Committed Scheduling participant to automate its scheduling using the BPA provided schedule value in accordance with applicable DOE cyber security standards if, over a rolling 30 calendar day period, the participant incurs:
a. two unwaived failures of a Committed 30/60 or Committed 30/30 schedule for the Energy or Capacity metric;
b. or four unwaived failures of a Committed 40/15 or Committed 30/15 schedule for the Energy or Capacity metric;
c. or two unwaived failures of the Accumulation metric

Upon receipt of a notice with this requirement, the committed scheduling participant must notify BPA within five Business Days of its intent to comply and complete the change in its scheduling systems within 30 calendar days of receiving BPA's new signal providing the schedule value.

During the intervening period the committed scheduling participant is expected to exercise due diligence to continue to achieve the expected scheduling accuracy.
a. If BPA observes during the intervening period that a participant is missing the scheduling accuracy metrics more than once per week or appears to have stopped routinely scheduling to the BPA provided schedule value, BPA may notify the participant of the temporary suspension of the discount for Committed Scheduling by assessing any applicable Direct Assignment Costs as described in Section III.E. 6.2 of BPA's ACS-14 Rate Schedule starting the first day of the following billing cycle and continue until the first day of the billing cycle after automated scheduling is successfully implemented.

4. BPA may initiate billing a committed scheduling participant at its elected VERBS base rate plus any applicable Direct Assignment Costs as described in Section III.E. 6.2 of BPA's ACS-14 Rate Schedule, within 30 calendar days, starting the first day of the next billing cycle if:

      a.the Participant fails to convert to automated scheduling of the BPA-provided schedule value within two weeks of receiving the new signal from BPA or;

      b. on the third unwaived failure of a Committed 30/60 or Committed 30/30 schedule for the Energy or Capacity metric;

      c. or on the sixth unwaived failure of a Committed 40/15 or Committed 30/15 schedule for the Energy or Capacity metric;

      d. or on the third unwaived failure of the Accumulation metric

5.   A committed scheduling participant who has failed to perform at its elected schedule interval will be directly assigned the cost of acquisitions caused by the unplanned increase in the reserve requirements for the BPA BAA. See the Purchases Charge for Direct Assignment of Costs to a Customer in Section III.E.6.2 of the ACS-14 Rate Schedule.

6. When a Committed 30/30, Committed 40/15, or Committed 30/15 Scheduling Resource is sinking to load within the BPA BAA and the Balancing Resource is not changing schedules in response to the intra-hour adjustments, BPA will issue a notice to the Committed Scheduling participant and the Balancing Resource.

    a. BPA may disqualify the poorly performing Balancing Resource upon 14 calendar days notice if, over a rolling 30 calendar day period, the Balancing Resource incurs:

      1. two unwaived failures of a Committed 30/60 or Committed 30/30 schedule for the Energy or Capacity metric;

      2. or four unwaived failures of a Committed 40/15 or Committed 30/15 schedule for the Energy or Capacity metric;

      3. or two unwaived failures of the Accumulation metric

      During this period the Balancing Resource is expected to exercise due diligence to continue to achieve the expected response.

    b. Failure to qualify a new Balancing Resource within the 14 calendar days notice period mentioned in a. above will result in termination from participation in Committed Scheduling. During this period the Balancing Resource is expected to exercise due diligence to continue to achieve the expected response.

    c. BPA may disqualify a non-performing Balancing Resource upon seven calendar days written notice. If the Committed Schedule does not have another qualified Balancing Resource the Committed Scheduling Resource will be billed the uncommitted scheduling rate starting on the first day of the next billing cycle.

    d. A resource may re-qualify as a Balancing Resource after 30 days and at the start of the next billing cycle by providing documentation to BPA, and receiving approval from BPA, that it has corrected the causes for its disqualification. BPA will work with the Committed Scheduling Resource and the Balancing Resource to develop solutions.

I. Additional Information
Policy Reference

• 2014-2015 Transmission and Ancillary Service Rates

Related Business Practices

• Redispatch and Curtailment

• Requesting Transmission Service

• Scheduling Transmission Service

- Generation Imbalance Service

- Failure to Comply

- On Demand Resource Scheduling

- Oversupply Management Protocol

Version History

Version 5	9/1/14 Provides for the inclusion of a generation forecast value in the scheduling metrics during periods where a generation limit or schedule curtailment has affected the calculation of the persistence value.
Version 4	4/1/14 Adds the requirements for Committed 40/15 and Committed 30/15 scheduling.
Version 3	02/05/14 Version 3 of this business practice refines the requirements for Section B Prequalification Information Required and Section H Notification of Failure to Meet Scheduling Accuracy and Termination to align the provisions with the ACS-14 Rate Schedule. Version 3 includes the following changes: Section B • Step B.1.f: Revised language • Step B.1.g: Replaced "Uncommitted Scheduling" with "elected" and added "Rate plus any applicable Direct Assignment Costs as described in Section III.E. 6.2 of BPA's ACS-14 Rate Schedule" Section H • Step H.3.a: Added "by assessing any applicable Direct Assignment Costs as described in Section III.E. 6.2 of BPA's ACS-14 Rate Schedule" • Step H.4: Deleted step • Step H.4: Revised language • Step H.6: Deleted step • Step H.5: Replaced "moved to a longer" with who has failed to perform at its elected" and deleted "option by BPA" • Steps H.9.a-d: Deleted steps
Version 2	10/01/13 Version 2 of this business practice implements requirements for providing additional data if necessary to qualify a resource for committed scheduling and to provide clarity for the application of the BPA provided signal from different sources for Committed Scheduling Participants. This Business Practice takes effect on October 1, 2013 and describes BPA's requirements and other details for participation in Committed Scheduling. The specific changes to Version 2 include: • Section B: Added step 1.h. • Section E: • Title change replaced "iCRS" with "Data Link"

	• Step E.4: Deleted "iCRS ceases to produce" and added "or another mutually agreed to data link" and "ceases to be produced"
	• Section F:
	  • Step F.1.a: Added "The committed scheduling participant is expected to schedule to the value provided in the data link established for their resource.
	  • Step F.1.b: Added "or another mutually agreed to data link"
	  • Step F.2.a: Added "The committed scheduling participant is expected to schedule to the value provided in the data link established for their resource."
	  • Step F.2.b: Added "or another mutually agreed to data link"
	• Section H: Step H.2: Added "or another mutually agreed to data link" and "Waiver requests will be evaluated against the persistence value provided by BPA from the mutually agreed to data link."

Version 1	07/03/13 New business practice